LABORATORY CAPILLARY RHEOMETER LCR7000

Dynisco
Series LCR7000

Versatile

The LCR 7000 Capillary Rheometer offers many new features and will meet the demands of a 24-hour a day shop floor operation while maintaining the highest possible level of accuracy, repeatability and sensitivity. The LCR series rheometers are versatile and easy to use yet they offer the most sophisticated materials characterization, data analysis, and reporting capabilities. The LCR 7000 can be used with a standard load cell and a barrel mounted pressure transducer (optional).

Sophisticated Software

LAB KARS – Advanced Rheology Software is the most powerful and easy to use rheological Windows™ based software package available. Just a few of its easily useable features include: Bagley and Rabinowitsch Corrections plus Power Law, Carreau, Modified Cross and Polynomial viscosity models. With this software users can merge multiple data files from shear stress, shear rate, or thermal stability tests. The resident KARS SQC module can be used to quickly identify viscosity variations in different lots of material. A program for the correlation of melt viscosity to intrinsic viscosity, for PET and Nylon, is also included.



Real-Time Display

In addition to all of its other powerful features LAB KARS for Windows™ provides a real time display of force or pressure versus time as a test progresses. This feature allows the operator to identify the steady state flow condition for the material. In addition, the presence of contamination, unmelted resin, or bubbles in the material may be identified from spikes in the force versus time curve.

Features for Ease of Use and Precision

- All digital calibration
- Increased speed and force range
- Advanced electronics and software enable up to 45 shear stress or shear rate data points per test
- Unique algorithms for polymer melt stability
- Bi-directional communications enable test parameters to be downloaded from the PC
- Multiple barrel heating zones and adaptive PID temperature control algorithm provide precise and uniform heat up to 430°C (500°C optional)
- Precision servo-drive motor and transducers enable tight control of stress and rate mode tests
- Tungsten Carbide dies and a hardened and honed tool steel “swing-out” barrel ensure long years of service
- LAB KARS Advanced Rheology Software

Options for Special Requirements

A comprehensive list of optional features provides for the testing of a wide range of materials. These include:

A corrosion resistant alloy barrel for testing corrosive materials such as PVC.

Tungsten carbide dies with a broad range of diameters and L/D ratios provide a wide range of measurement capability.

A melt pressure transducer, mounted just above the die, monitors frictional and barrel pressure effects.

A laser micrometer for accurate measurements of die swell as the extrudate exits the die.

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Specifications

Standards	DIN ISO 11433, DIN 53014, DIN 54811, ASTM D3835
Barrel	l = 162 mm (6.378“) ø = 9.55 mm ± 0.005 mm (0.376“ ± 0.0002“)
Drive System	DC Servomotor
Piston Speed	0.03 to 600 mm/min
Dynamic Range	20,000:1
Testing Force	5 or 10 kN standard (resolution 0.2N) 15 kN (optional)
Force Measurement	Load cell standard, barrel mounted pressure transducer (optional)
Dies	Tungsten carbide capillary, many L/D ratios available
Die Swell Measurement	Laser-Micrometer (optional)
Temp. Range	up to 430 °C Standard
Temp. Control	4 zone electric heater
Temp. Sensor	4-wire Platinum RTD
Temp. Control	Adaptive PID-temperature-control-algorithm with 0.1 °C resolution
Temp. Accuracy	+/-0.2 °C at 13 mm (0.50“)
Power Supply	115/230 VAC, 60/50 Hz
Power Consum.	750 W max, 200 W typical
Data Processing System	PC based
System Software	LAB KARS for Windows™ (Advanced Rheology Software)

LAB KARS Features:

- Bagley and Rabinowitsch Corrections
- Carreau, Modified Cross, Power Law and Polynomial curve fits
- Arrehnius Temperature fit
- Statistical error estimation
- Shear rate dependence
- Time at temperature relationship
- Critical shear stress
- Zero shear viscosity
- Intrinsic viscosity correlation

Models and Options

Model	Description
LCR7000	LCR 7000 capillary rheometer with load cell, with cleaning and operating tools and one tungsten carbide orifice
Option	**Description**
GP8000	Personal computer with Windows™ software installed
LAB KARS (7052-SW)	Advanced Rheology Software requires personal computer (Check with DYNISCO for system compatibility)
8052-150	Barrel mounted pressure transducer
GP7984C	Color Printer
8052-130	Alloy barrel and piston tip for testing corrosive materials (PVC, Flouropolymers)
8052-155	Cleaning tool kit for pressure port
8052-97K	High speed barrel bore cleaning kit
D7990	Electronic load cell calibration kit
D8052DS1	Laser micrometer die swell measuring system
GRAN	High speed mini granulator
BTP1000A	Probe for barrel temperature calibration
8052-65BG	Barrel bore gauge kit

Dynisco
Polymer Test

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